



Energy Multiplier Module (EM²)

General Atomics has a new vision for nuclear energy utilization in the U.S.



Dr. John Parmentola, Senior Vice President for Energy and Electromagnetic Systems at General Atomics, will briefly describe how the Energy Multiplier Module can address concurrently five major U.S. nuclear policy issues, and how the Federal government can facilitate commercial efforts to develop and deploy this technology.

EM² is a high-temperature (850° C), modular helium-cooled fast reactor, designed to produce 240 MWe and is passively safe.

“Nuclear Waste” or Used Nuclear Fuel

EM² exploits the energy remaining in used nuclear fuel, or depleted uranium (DU), while minimizing the need for long-term repositories.

- EM² can utilize used nuclear fuel or DU to reduce “waste” inventories.
- EM² waste materials are fission products.

Economics

EM² should be approximately 30 percent less in capital cost and average cost per kilowatt-hour than advanced light water reactors.

- Due to its operating temperature EM² is about 50% more efficient than existing light water reactors.
- Modules can be manufactured in domestic facilities and shipped to the site, reducing construction cost and schedule.
- National Labs have significant assets that can be used to expedite the development and reduce costs of EM².

Non-proliferation

EM² reduces the risk of weapons material proliferation.

- Enhanced fuel utilization will reduce the “spent fuel” inventory
- EM² employs a closed fuel cycle without the use of conventional reprocessing
- Reduces the need for uranium enrichment
- Operates for 30 years without refueling or fuel reshuffling

Energy Security

EM² can dramatically reduce the need for foreign energy imports.

- Siting flexibility (cooling water not required) provides for a much wider availability of electricity generating sites that could be used for displacing oil from automobile use.
- High operating temperatures provide process heat for industrial applications and hydrogen production.

Workforce Capacity

EM² technology can contribute to strengthening the U.S. economy.

- Application of transformational technology can create a new domestic industry, attracting eager minds to a new nuclear enterprise with a long-term future.

In order to realize reactors like EM², the Federal government should adopt a policy that encourages new concepts that address these national issues concurrently. The Federal government should fund the research required to resolve the major challenges involved in turning these new concepts into potential commercial options.

